

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously Presented) A one-dimensional piezoelectric actuator array comprising:

a piezoelectric device substrate having a plurality of comb teeth arranged in a one-dimensional matrix and connected to one another at a first end of the piezoelectric device substrate, at least one of the comb teeth being one of a plate-shaped piezoelectric member and a pillar-shaped piezoelectric member having at least one pair of electrodes formed thereon, the one-dimensional matrix forming a plane extending along a length of the comb teeth from the first end of the piezoelectric device substrate to an opposite end thereof and contacting each of the plurality of comb teeth; and

a guide substrate having a concave portion for housing at least a part of the piezoelectric device substrate, the concave portion extending parallel to the plane of the one-dimensional matrix,

wherein the guide substrate and the piezoelectric device substrate are integrally unified in such a manner that the guide substrate and the piezoelectric device substrate are readily usable as individual stacks for formation of a multiple stack structural body.

2. (Previously Presented) The one-dimensional piezoelectric actuator array according to claim 1,

wherein the guide substrate includes at least one of projections and ridges arranged at an interval corresponding to a width between the piezoelectric members positioned adjacently each other in a bottom surface of the concave portion for housing, and

wherein the respective at least one of projections and ridges are inserted between the piezoelectric members positioned adjacent to each other, and the guide substrate and the piezoelectric device substrate are integrally unified.

3. (Original) The one-dimensional piezoelectric actuator array according to claim 2 further comprising a wiring circuit disposed on the guide substrate and connected to the electrodes.

4. (Previously Presented) A two-dimensional piezoelectric actuator array comprising a plurality of one-dimensional piezoelectric actuator arrays stacked together, said one-dimensional piezoelectric actuator array comprising:

a piezoelectric device substrate having a plurality of comb teeth arranged in a one-dimensional matrix and connected to one another at a first end of the piezoelectric device substrate, at least one of the comb teeth being one of a plate-shaped piezoelectric member and a pillar-shaped piezoelectric member having at least one pair of electrodes formed thereon, the one-dimensional matrix forming a plane extending along a length of the comb teeth from the first end of the piezoelectric device substrate to an opposite end thereof and contacting each of the plurality of comb teeth; and

a guide substrate having a concave portion for housing at least a part of the piezoelectric device substrate, the concave portion extending parallel to the plane of the one-dimensional matrix.

5. (Previously Presented) The two-dimensional piezoelectric actuator array according to claim 4, wherein the guide substrate includes at least one of projections and ridges arranged at an interval corresponding to a width between the piezoelectric members positioned adjacently each other in a bottom surface of the concave portion for housing, and

wherein the respective at least one of projections and ridges are inserted between piezoelectric members positioned adjacent to each other, and the guide substrate and the piezoelectric device substrate are integrally unified.

6. (Original) The two-dimensional piezoelectric actuator array according to claim 4 further comprising a wiring circuit disposed on the guide substrate and connected to the electrodes.

7. (Previously Presented) A two-dimensional piezoelectric actuator array comprising:

a plurality of piezoelectric device substrates, each piezoelectric device substrate having a plurality of comb teeth connected to one another at one end of the piezoelectric device substrate, at least one of the comb teeth being one of a plate-shaped piezoelectric member and a pillar-shaped piezoelectric member having at least one pair of electrodes formed thereon; and

a first guide frame member being a hollow box shape and having a plurality of pairs of guide grooves for housing the plurality of piezoelectric device substrates, the guide grooves being formed on two opposed inner surfaces of the guide frame member, and the guide grooves being arranged in pairs at an interval corresponding to a thickness of the piezoelectric device substrate,

wherein the plurality of piezoelectric device substrates is inserted and housed in the guide grooves of the first guide frame member such that each piezoelectric device substrate is aligned in a corresponding pair of the guide grooves, and the plurality of piezoelectric members remain movable within the guide frame member throughout a portion of the piezoelectric members having the pair of electrodes formed thereon.

8. (Previously Presented) The two-dimensional piezoelectric actuator array according to claim 7 further comprising a lid member having slits formed at the same

interval as between two guide grooves positioned adjacently each other, the slits having a shape corresponding to a shape of tip ends of the piezoelectric members, wherein the tip ends of the plurality of piezoelectric members are inserted into the slits to be fixed at predetermined positions, respectively.

9. (Previously Presented) The two-dimensional piezoelectric actuator array according to claim 8 further comprising wiring components having a structure aligned/arranged in a spatial manner same as that of the plurality of piezoelectric members and being connected to respective electrodes.

10. (Previously Presented) A one-dimensional piezoelectric actuator array comprising:

a plurality of piezoelectric devices arranged in a one-dimensional matrix in an independently separated state, each of which comprises a one of a plate-shaped piezoelectric member and a pillar-shaped piezoelectric member having at least one pair of electrodes formed thereon, the one-dimensional matrix forming a plane extending along a longitudinal length of the piezoelectric devices and contacting each of the plurality of piezoelectric devices;

a guide substrate having a concave portion for housing at least a part of each of the plurality of piezoelectric devices, the concave portion extending parallel to the plane of the one-dimensional matrix

wherein the guide substrate and the plurality of piezoelectric devices are integrally unified in such a manner that the guide substrate and the plurality of piezoelectric devices are readily usable as individual stacks for formation of a multiple stack structural body.

11. (Previously Presented) A two-dimensionally aligned piezoelectric actuator array comprising:

a plurality of piezoelectric devices, each piezoelectric device comprising one of a plate-shaped piezoelectric member and a pillar-shaped piezoelectric member, and at least one pair of electrodes formed on the piezoelectric member; and

a second guide frame member, having a plurality of openings arranged in a grid form, and a housing space being channeled through the plurality of openings,

wherein the piezoelectric devices are fixed within the second guide frame member by inserting each of the plurality of piezoelectric devices into corresponding openings of the housing space of the second guide frame member, thereby the plurality of piezoelectric devices remain movable within the second guide frame member throughout a portion of the piezoelectric devices having the pair of electrodes formed thereon.

12. (Previously Presented) The two-dimensional piezoelectric actuator array according to claim 11 further comprising wiring components having a structure aligned/arranged in a spatially manner same as that of the plurality of piezoelectric devices and being connected to respective electrodes.

Claims 13-17 (Cancelled)